

The fixed stars and their spectra and variations are next considered, and the various proposals concerning their classification are discussed; but here we cannot but express regret at the lack of scientific spirit which permeates some of the passages. For example, in describing the classifications, presumably to students and general readers, we find the author stating that the classification proposed by Lockyer, having as a fundamental feature the evolution of the heavenly bodies, is, in his opinion, based on such uncertain premises that he neglects entirely any further reference to its foundation and characteristics. Surely a classification which yet remains to be proved inadequate in the explanation of observed phenomena, and which explains so many of the problems of stellar evolution so simply, should not be so summarily dismissed from what is, presumably, intended as a standard work on the subject. How different is Hale's attitude mentioned above. There, whilst making the reservations which he thinks necessary, he discusses the matter in relation to the most recent work, and shows that one, at least, of the fundamental points in the temperature classification is capable of experimental demonstration.

The remainder of the book is devoted to the discussion of radial velocities, novæ, the changes produced in spectra by variation of the conditions under which the light-source is produced, the several types of stars showing extraordinary spectra, and variable stars. In conclusion, there is a chapter (xxviii.) in which the results obtained from celestial photography are discussed, special attention being paid to the photographs of nebulae and of the Milky Way.

The volume is illustrated by thirty full-page reproductions of photographs and two hundred and ten figures in the text, and should afford German readers a good general view of the study of astrophysics.

WILLIAM E. ROLSTON.

PEKING TO MANDALAY.¹

THE great development of the facilities for travel in the interior of China that has taken place in recent years is strikingly brought home to us by the narrative of Mr. Johnston, the magistrate of our little port of Weihaiwei, in North China. Since the days of Marco Polo, who himself travelled from the old capital of China to that of Burma, many European travellers, for instance, Baber, Colquhoun, Gill, and Morrison, have passed through much the same localities and mainly by the same route, but none, perhaps, have traversed the greater part of the ground more swiftly than Mr. Johnston. Leaving Peking on January 13, 1906, by the great new inland railway, built by French and Belgian engineers since the Boxer occupation of Peking in 1900-1, he reached Hankow, on the Yangtse, on January 16, a distance of 759 miles, and the journey could have been done in half the time but for the train running only in the daytime, halting overnight and resuming its journey in the morning. From Hankow, shallow-draught steamers owned by British, Chinese, and Japanese companies proceed up the Yangtse thrice weekly to Ichang, at the entrance to the great gorges of the Upper Yangtse, described by Little and others, a thousand miles from the mouth of that river and in the very heart of China. In one of the Japanese steamers our author made this journey in three or four days from Hankow; and ten days more by "red boat" took him 200 miles through the gorges and up the rapids to Wan-hsien, in the rich province of Ssuch'uan beyond

the gorges. Here Mr. Johnston proceeded inland to Tachien-lu, visiting by the way the sacred Mount Omei, to the previous descriptions of which by Baber,¹ Little,² and others he adds something, though unfortunately he gives no photographs or sketches of the contour of the mountain.

Mount Omei, which the legends associate with the mythical progenitors of the Chinese race, Fu Hsi and Nu Wo, ascribed to the twenty-ninth century B.C., and who have their caves here, early became a centre of the Buddhists. A temple to Buddha is alleged to have been erected here in the reign of Ming Ti (58-75 A.D.), under whom Buddhism is supposed to have been introduced into China. A remarkable feature of this mountain, and one which has evidently contributed to its sacred repute, is the phenomenon of the *anthelia* locally known as the "Glory of Buddha." From the summit of the mountain the awe-struck pilgrim, standing on the edge of a tremendous precipice, which Baber describes as probably the highest in the world, sees, under favourable atmospheric conditions, several thousand feet below him, floating on a bank of cloud, this beautiful iridescent halo in all the brilliant prismatic colours of the rainbow. It is of the same kind as the spectre of the Brocken, and is to be seen under similar conditions in other parts of the Alps and in the Himalayas. The necessary conditions are said on hearsay by our author, who himself was not so fortunate as to see the spectacle, to be a fairly clear sky and a bank of cloud below; but he omits an equally essential condition, namely, that the sun must be on the opposite side of the spectator to the bank of cloud.

From Mount Omei Mr. Johnston passed to Tachien-lu, the well-known mart and missionary station in western China, and thence down through the wild border country to Burma. The first part of this route lay to the east of the usual track, and led for about a month's march down the valley of the Nya Rong or "Yalung" river to Li-chiang by a road "evidently about the same" as that traversed by M. Bonin in 1895,³ and by the missionary, Mr. E. Amundsen, in 1898,⁴ and crossed by Major H. R. Davies in his exploratory survey of western China. This district and its interesting wild tribes, the Lolo or Man-tzu, and others, are so comparatively unknown that we regret to find so little new about them in this book. The author tells us that his journey "was not undertaken in the special interests of geographical or other science," but to gratify a desire for travel and to acquire some knowledge of the various wild tribes. He gives us, however, little fresh information about the tribes, not even photographs of them that are of any use for ethnological purposes. Indeed, the want of new and more precise observation is the chief defect of the book, and for a travel-book there is far too frequent a tendency to theorise and to inflate the text with discursive and speculative views on the general tenets of Buddhism and on commonplace topics of that religion taken from the well-known works of European writers. So again, when he devotes about ten pages to Mr. Kingsmill's extravagant theory which ascribes to the barbarous Man-tzu tribes of China a descent from "the stock of the Maurya family of north-western India," we think that Mr. Johnston takes too seriously the legends fabricated by Buddhist priests in the countries outside India in order to affiliate themselves to the family of Asoka, the great Buddhist emperor of India. Considerable space, totalling about three pages, is taken up by the introduction of Chinese

¹ "From Peking to Mandalay: A Journey from North China to Burma through Tibetan Ssuch'uan and Yunnan." By R. F. Johnston. Pp. xii+460; with Maps and Illustrations. (London: John Murray, 1908.) Price 13s. net.

² "Supplementary Papers," Roy. Geog. Soc., vol. i.

³ "Mount Omi and Beyond." By A. Little.

⁴ *Bulletin de la Soc. de Géog.*, 1898, pp. 389 et seq.

⁵ *Geog. Jour.*, June and November, 1900.

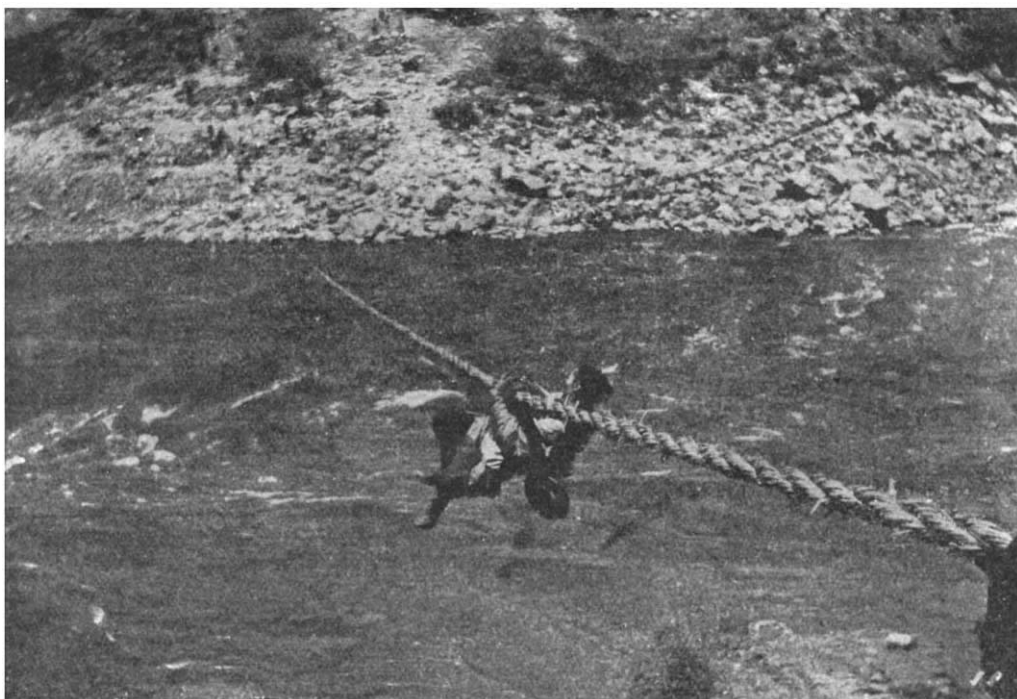
type in footnotes for common names which are already transliterated into English in the text. We have seen the Tibetan cryptic spell written in a variety of ways in travellers' narratives, but we do not remember to have seen it rendered "Om mane padme hom," as it repeatedly appears here. On the other hand, Mr. Johnston tells the story of his journeyings pleasantly and effectively, and with much literary skill; and he gives in appendices three pages of valuable vocabularies in the dialects of five tribes (Yung-ning Liso, Yung-ning Moso, Muli [Njong], Pa-u-rong Hsifan, and Pa-u-rong Lolo); also some statistical and fiscal information translated at first hand from the official records of Mount Omei and the Ssuch'uan provincial chronicles.

He is a believer in the reality of the "Yellow Peril," and picturesquely supports the tragic conjecture that the Western peoples some day may be crushed out of existence and their yellow

doom of the conqueror in this fight is that he must never sheath his sword. New challengers are ever pressing into the lists, and the challenged must ever go armed and with lance in rest." L. A. W.

INTERNATIONAL PHYSICS.

RECENT work at the Bureau international des Poids et Mesures is described in the volumes referred to below.¹ The volumes, like their predecessors, are full of interest to the physicist concerned with exact measurements, and are a monument to the services rendered to science by the International Committee of Weights and Measures and the director and staff of the well-known institution at Sèvres. Though twenty-two nations participate in the work of the committee, the total budget of the institution is limited by statute to 4000*l.* a year. This sum is made up by contributions by the different nations on



Crossing the Yalung River. From "From Peking to Mandalay."

successors scarcely regret their disappearance any more than we ourselves regret the extinction of the dinotherium or the ichthyosaurus. "Why indeed should they?" he asks. "When we consider how seldom the memory even of our own dead ancestors touches our sympathies or prompts an affectionate thought, it will not seem strange that in days to come the victorious Yellow man may regard the extinct White man with no more emotion than the visitor to a museum now regards the wire-linked bones of a prehistoric monster. No creature that is doomed to failure in the struggle for existence need look to the conquerors for the least sign of pity or sympathy. No less cheerfully warbles the thrush because the great auk will flap his ineffectual wings no more. Even the crocodile refrains from shedding tears over the fossil remains of the Triassic *stagonolepis*. It behoves us to remember that victory in the struggle for existence is not a victory once and for all. The

a scale based on their respective populations, the latter being multiplied in each case by an appropriate factor, 1, 2, or 3, according as the metric system is not employed, is permissive, or is obligatory. The United Kingdom recently passed from Class (1) to Class (2), and, paying only on the population of the mother country, contributed, in 1907, 6339 francs, or about one-sixteenth of the total sum required.

After some interesting correspondence between the International Committee and the British Government on the question of the representation of the colonies belonging to this country, Canada has just entered the convention as an autonomous nation having its own delegate.

At the present time Great Britain is in the happy

¹ "Procès-verbaux des Séances du Comité international de Poids et Mesures." Deuxième Série. Tome iv.

"Travaux et Mémoires du Bureau international des Poids et Mesures." Tome xiii. (Paris: Gauthier-Villars, 1907.)